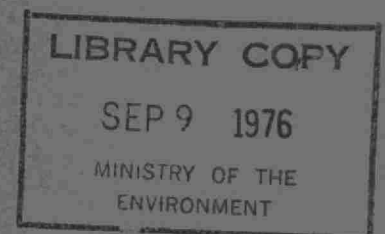


# POLLUTION SURVEY OF THE COMMUNITY OF MACTIER

District Municipality  
of Muskoka

1975

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Ministry  
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Environment

P. G. Cockburn P. Eng.  
Regional Director  
Central Region

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DISTRICT MUNICIPALITY OF MUSKOKA

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INTRODUCTION:

In 1965 and 1972 water pollution surveys were conducted to assess the status of sewage disposal in the Community of Mactier. These reports culminated in a recommendation that the Community install a sewerage system and a municipal sewage treatment plant.

The inflated costs of the project have reached the point where the recommendations had to be re-evaluated. This report considers the alternative of repairing or replacing individual disposal systems as a more economical solution.

Ministry staff carried out a house by house survey in November, 1975 to determine the number of private systems that would have to be replaced or corrected and the feasibility of upgrading each lot on this basis.

I SUMMARY:

A water pollution survey was carried out in the Community of Mactier in the Summer and Fall of 1975.

Using the same sampling stations as the 1972 OWRC report, "Water Pollution Survey Community of Mactier, Township of Georgian Bay", staff instituted a bi-weekly sampling programme during the Summer and Fall of 1975. The purpose of the programme was to determine whether changes in water quality had occurred since 1972.

In November, a door to door survey was carried out to identify individual problems and to determine the number of systems that required replacement or repair. The survey required 30 man-days of work over a period of two weeks.

Both the 1972 OWRC report and a 1972 report of the Private Waste and Water Management Branch identified septic tanks as the major cause of pollution of the ditches in the Community. These conclusions were verified by this survey.

The results of the water sampling program are tabulated along with the results of the 1972 OWRC report, for comparison, in Appendix I. The results indicate a deterioration of water quality which indicates a deterioration of the existing sub-surface sewage disposal systems.

An important reason for the deterioration of the septic tanks and leaching beds is the high water table in the Community. When a leaching bed is located in or near the water table, proper soil filtration is prevented and direct pollution of the groundwater may result. The pressure of the groundwater may also force effluent to break through the surface of the tile bed or at a weak connection in the line, allowing contaminated water to be exposed on the ground surface.

Most of the systems in the area of Fern Avenue are subject to a high water table which could be lowered by blocking the culvert on Joseph Street.

Based on the water sampling of the streams and the Ministry of the Environment report of August, 1975 "Water Quality of Stewart Lake", it is apparent that the water quality of Lake Stewart is deteriorating and that immediate action must be taken.

## II CONCLUSION:

Disposal of sewage on individual lots is possible by installing new septic tank systems, aerobic treatment systems or holding tanks; or by repairing existing systems. The costs of these systems or repairs would be considerably less than a sewage treatment plant and collector system.

It is recommended that repairing or replacing individual systems be given serious consideration as a more economical alternative to the Provincial Project now being studied.

## III GENERAL:

The Community of Mactier has a population of approximately 850 people. It is located on the west shore of Lake Stewart in the Township of Georgian Bay (Freeman Ward) near the junction of Highways 103 and 69. It was once a marshalling yard for the C.P.R.; however, the present economic base is the tourist industry.

The Community is served by a municipal water supply which draws from Lake Stewart; individual wells serve the outlying areas. Sewage is treated by septic tanks and tile beds, privies and systems which discharge sewage directly from the septic tanks to the ditches.

The topography consists of bald granite outcrops and limited soil overburden. Drainage is provided by open roadside ditches and two small streams which drain to Lake Stewart.



IV WATER SUPPLIES:

The Municipal water supply is obtained from Lake Stewart and flows by gravity through a 10 inch main to the pump house on the shore of Stewart Lake. There are two vertical turbine pumps at the pump house which may be operated in parallel to produce a total capacity of approximately 600,000 gallons per day. For normal use, one service pump is used providing a capacity of 310,000 gallons per day. One of the service pumps, driven by a diesel unit, may be used for emergency standby purposes. Chlorination is the only treatment provided. Chlorine is added directly to the wet well.

There are approximately 210 connections to the water distribution system.

V PROPOSED MUNICIPAL TREATMENT PLANT AND COLLECTOR SYSTEM:

The former Township of Freeman requested the development of a Provincial sewage works program in 1967. A consulting engineer's report was approved in the latter part of 1968; however, the cost proposal submitted to council was rejected as excessive. Council indicated it was in favour of proceeding with the works if further financial assistance could be found.

The Ontario Municipal Board held hearings and subsequently approved the project. However, construction estimates began to increase rapidly because of inflationary pressures. The provincial grants had been approved on the basis of 75% but not exceeding \$1.0 M.; however, revised estimates of the cost are about \$2.2 M.

A second Ontario Municipal Board hearing was scheduled to hear objections to the location of the treatment plant; however two days before the hearing, the objections were withdrawn and the hearing cancelled.

VI WATER SAMPLE RESULTS:

A sampling programme was conducted during 1975 to re-assess the condition of sewage disposal systems and their effect on the water quality of local storm drainage systems and water-courses.

Identical sample point locations were used in the 1975, 1972 and 1965 surveys. A comparison of the chemical and bacteriological water quality during 1965, 1972 and 1975 is shown in Appendix I.

1. Creek A:

Mosquito Lake is located on the west side of the Community of Mactier. It's outlet is through the Cranberry Marsh which is located along the west side of Joseph Street. Reference is made to Drawing 2 showing its location.

Sample locations along this creek are designated A-1 through N-3.

A culvert located at Joseph and Centre Street (sample location A-1), directs the swamp flow through a densely populated section of the Community, eventually entering Stewart Lake.

Bacteriological samples collected at this location indicate high total coliform, faecal coliform and faecal streptococcus concentrations. The high bacterial counts in this area may be attributed to the discharge of wastewater from numerous homes along Joseph Street.

The swampy area also collects flow from a drainage ditch located west of District Road 11, south of Haig Street. Domestic sewage gains access to the drainage ditch from malfunctioning tile beds, wastewater discharges and privies. All sewage systems are too close to the drainage ditch.

A small drainage ditch south of Haig Street also drains into the swampy area. Bacteriological samples collected downstream (sample location A-2) indicate consistently high bacterial counts.

Bacteriological samples collected from a ditch on the south side of North Street, draining into Creek A, (sample locations N-2, N-3), indicate the presence of domestic sewage.

As Creek "A" flows along the west side of Fern Avenue, bacteriological concentrations remain high indicating the presence of domestic sewage from malfunctioning tile beds. (sample locations M-2, M-3, A-3).

The bacteriological quality of Stewart Lake at the outlet of Creek "A" (sample location LS-1), exceeds the recommended guideline for body contact use.

2. Creek B:

North of Haig Street, the drainage ditch enters a storm sewer system which drains the High and Front Street area which is the commercial center of the Community.

Dye tests indicate that all catchbasins are connected to each other and into a storm sewer which flows into Creek B and ultimately into Stewart Lake.

Since all catchbasins are interconnected, only one, located on the southwest corner of High and Front Street, (sample point location B-2), was selected for regular sampling.

Chemical analyses indicate deteriorating water quality, while extremely high bacteriological concentrations signify the presence of domestic waste from sewage disposal systems surrounding the commercial section.

Another catchbasin, B-9, located downstream of B-2 on the north side of Front Street, contained a four inch diameter PVC pipe leading from the sump pump of a residence on the corner of High and Front Streets. Chemical and bacteriological samples indicate the sump may be receiving leachate from an old tile bed located upgradient of the catchbasin. A new tile bed was installed after the water quality survey at a higher elevation and directly above the catchbasin.

A bacteriological sample collected from the creek, downstream of all the catchbasins (sample point location B-6), exhibited high bacteriological concentrations.

A bacteriological sample collected from Stewart Lake in the area where Creek B enters (sample point location LS-8), indicates water quality impairment.

3. Beech Avenue Drainage Ditch:

This ditch drains the northern portion of Railway Street, then flows along Beech Avenue and into Stewart Lake beside the pumphouse.

The bacteriological quality of the stream water had deteriorated since 1972, exceeding recommended guidelines for body contact.

The general water quality of Stewart Lake in the area of the pumphouse also shows a marked decline from previous reports with bacteriological counts exceeding guidelines for recreational use.

Malfunctioning tile beds along Beech Avenue plus surface runoff from the rock outcropping on the west side of Beech avenue may be responsible for deterioration of Stewart Lake in this area.

4. Stewart Lake:

In 1972, it was stated that continued pollution of the drainage ditches and watercourses flowing through the community could result in future deterioration of Stewart Lake's water quality. The 1975 sample survey indicates that the water quality of Stewart Lake is generally acceptable for recreational use; however, four sample point locations (LS-1, LSC-3A, LS-4, LS-8) showed higher

bacteriological counts than in 1972.

During 1974, Ministry staff conducted an extensive water quality survey of Stewart Lake. The August, 1975 report concludes that the bacteriological quality during May, 1974 was within the guidelines for total body contact recreational use; however, the August, 1974 results exceeded these guidelines.

Dissolved oxygen profiles indicate depletion during late summer and fall. During the period of oxygen depletion, the bottom 10 meters of Stewart Lake is an unsuitable habitat for cold water fish species.

#### VII ALTERNATE METHODS OF SEWAGE DISPOSAL:

Appendix I shows the results of the survey of individual sewage disposal systems. The survey indicated that a high proportion of the homes will require either repairs to their systems or complete new systems. The high water table in the area could be lowered if the creek emanating from the Cranberry Marsh was diverted to the Moon River. Grant Mills, of the OWRC, discussed this possibility in 1968. This diversion would have to be approved by the Ministry of Natural Resources as it may be a fish and wildlife habitat. The lowering of the water table will allow the septic tanks and leaching beds to function properly.

1. Septic Tanks & Leaching Beds:

The survey indicated that the installation of standard septic systems is possible in some sections of the Community. This situation is particularly relevant in the area from the school, south along District Road 11, on the eastern side. The lots in this area are generally large with steep slopes from front to back. To create leaching beds in this area, it would be necessary to import permeable fill to a depth of 5 feet to conform with the regulations.

Since a standard septic tank system is the least expensive and simplistic in function, its use has been recommended wherever possible. There are some lots that are too small and; therefore, could not conform to the regulations under Part VII of The Environmental Protection Act. In these cases, the following alternative methods of sewage disposal have been recommended.

2. Small Proprietary Aerobic Treatment Systems:

These are basically septic tanks with mechanical means of introducing and mixing oxygen with the sewage. The BOD loading of the effluent is considerably lower than that from a standard septic tank and thus requires a smaller (approximately 1/3) leaching bed.

The compactness of a small proprietary aerobic treatment system makes it ideal for lots that cannot conform to the regulations for septic tanks.



The Ministry requires that these units be sold with a service contract. If a sufficient number were installed, the servicing could be a municipal responsibility.

In this report, extensive use of these systems has been recommended because of the lot sizes and high water table problems.

3. Larger Aerobic Treatment Systems:

The survey indicates that the costs of installing collector sewers, such as blasting and the installation of pumping stations would be high. In addition, the high water table could cause excessive infiltration.

The use of larger aerobic treatment systems was considered for several areas; however, the total costs would likely be greater than individual sewage systems.

For these reasons, larger aerobic treatment systems are not considered a viable alternative.

4. Holding Tanks:

Several holding tanks should be installed on lots that are too small for a small proprietary aerobic treatment system.

These lots are located beside the creek with lot dimensions and separation distances which can not meet the regulations under Part VII of The Environmental Protection Act.

VII SURVEY OF INDIVIDUAL SEWAGE DISPOSAL SYSTEMS, 1975

For the purposes of the survey, the Community of Mactier was divided into 10 areas designated A, B, C, D, E, F, G, H, J, K. (See Drawing 1)

Every system was inspected by an Environmental Officer. The area of the existing leaching beds was probed with a 1 inch auger. If there was less than 3 feet of soil above the water table, rock, or impervious stratus, the system was considered to be unsatisfactory and a potential polluter.

The main causes of pollution in the Community of Mactier are the high water table, lack of soil, and undersized or malfunctioning septic tank systems. The table following will show a possible correction for each problem lot.

Each lot in the various sections of the Community is identified with a symbol which indicates the most practical correction, if any, to an unsatisfactory sewage system.

KEY

STS - Septic Tank System

PAT - Proprietary Aerobic Treatment System

HT - Holding Tank

RLB - Repair Leaching Bed

SAT - Satisfactory

1. Section A

The starting point for Section A is the Toronto-Dominion Bank.

It is bounded on the south side by Front Street and on the east side by District Road 11 to a house at the south entrance to the community.

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION<br/>OR REPAIR SUGGESTED</u> |
|--------------------|---|
| A-1                | PAT   |
| A-2                | HT  |
| A-3                | PAT   |
| A-4                | RLB   |
| A-5                | STS   |
| A-6                | PAT   |
| A-7                | PAT   |
| A-8                | RLB   |
| A-9                | PAT   |
| A-10               | RLB   |
| A-11               | PAT   |
| A-12               | SAT   |
| A-13               | SAT   |
| A-14               | SAT   |
| A-15               | SAT   |
| A-16               | SAT   |
| A-17               | SAT   |
| A-18               | RLB   |
| A-19               | RLB   |
| A-20               | STS   |
| A-21               | STS   |
| A-22               | STS   |
| A-23               | STS   |
| A-24               | STS   |
| A-25               | STS   |
| A-26               | STS   |
| A-27               | SAT   |
| A-28               | STS   |
| A-29               | PAT   |
| A-30               | STS   |
| A-31               | STS   |
| A-32               | SAT   |
| A-33               | RLB   |
| A-34               | SAT   |
| A-35               | SAT   |
| A-36               | SAT   |
| A-37               | SAT   |
| A-38               | SAT   |

2. Section B

The starting point is the Mactier Community Centre. It is bounded on the south by District Road 11 and encompasses the west side of District Road 11 to the entrance at the south of Town.

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION<br/>OR REPAIR SUGGESTED</u> |
|--------------------|---|
| B-1                | SAT   |
| B-2                | SAT   |
| B-3                | STS   |
| B-4                | STS   |
| B-5                | STS   |
| B-6                | STS   |
| B-7                | SAT   |
| B-8                | STS   |
| B-9                | RLB   |
| B-10               | STS   |
| B-11               | SAT   |
| B-12               | SAT   |
| B-13               | STS   |
| B-14               | PAT   |
| B-15               | PAT   |
| B-16               | PAT   |
| B-17               | SAT   |
| B-18               | PAT   |
| B-19               | PAT   |
| B-20               | SAT   |
| B-21               | RLB   |
| B-22               | STS   |
| B-23               | HT  |
| B-24               | HT  |
| B-25               | HT  |

3. Section C

The starting point is the house on south side of Haig Street west of the arena. The area includes the south side of Haigh and west side of Joseph Streets to North Street.

|      |     |
|------|-----|
| C-1  | STS |
| C-2  | HT  |
| C-3  | SAT |
| C-4  | RLB |
| C-5  | SAT |
| C-6  | STS |
| C-7  | STS |
| C-8  | SAT |
| C-9  | SAT |
| C-10 | SAT |
| C-11 | STS |
| C-12 | SAT |
| C-13 | SAT |
| C-14 | SAT |
| C-15 | STS |
| C-16 | SAT |
| C-17 | SAT |

4. Section D

The starting point is the Simpson Sears Office.

It is bounded on the north by King Street, east by District Road 11, south by Haig Street and west by Joseph Street.

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION</u> |
|--------------------|-----------------------------|
|                    | <u>OR REPAIR SUGGESTED</u>  |
| D-1                | SAT                         |
| D-2                | SAT                         |
| D-3                | SAT                         |
| D-4                | SAT                         |
| D-5                | SAT                         |
| D-6                | SAT                         |
| D-7                | STS                         |
| D-8                | SAT                         |
| D-9                | STS                         |
| D-10               | SAT                         |
| D-11               | SAT                         |
| D-12               | STS                         |
| D-13               | STS                         |
| D-14               | PAT                         |
| D-15               | SAT                         |
| D-16               | PAT                         |
| D-17               | PAT                         |
| D-18               | PAT                         |
| D-19               | SAT                         |
| D-20               | SAT                         |

5. Section E

The starting point is the store adjacent to the Toronto-Dominion Bank. It is bounded on the north by George Street, east by Muskoka Road, south by Front Street and west by Highway 612.

|      |     |
|------|-----|
| E-1  | SAT |
| E-2  | SAT |
| E-3  | SAT |
| E-4  | SAT |
| E-5  | SAT |
| E-6  | PAT |
| E-7  | RLB |
| E-8  | SAT |
| E-9  | SAT |
| E-10 | PAT |
| E-11 | SAT |
| E-12 | SAT |
| E-13 | STS |
| E-14 | STS |
| E-15 | SAT |
| E-16 | SAT |
| E-17 | SAT |
| E-18 | SAT |
| E-19 | STS |

6. Section F

The starting point is the house at the northwest corner of Centre Street and District Road 11, next to the Church.

It is bounded on the north by Centre Street, east by District Road 11, south by King Street and west by Joseph Street.

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION<br/>OR REPAIR SUGGESTED</u> |
|--------------------|---|
| F-1                | SAT   |
| F-2                | SAT   |
| F-3                | STS   |
| F-4                | STS   |
| F-5                | STS   |
| F-6                | STS   |
| F-7                | SAT   |
| F-8                | SAT   |
| F-9                | RLB   |
| F-10               | SAT   |
| F-11               | SAT   |
| F-12               | SAT   |

7. Section G

The starting point is the house on the southeast corner of District Road 11 and Centre Street.

It is bounded on the south by North Street, east by District Road 11, south by Centre street and west by Joseph Street.

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION<br/>OR REPAIR SUGGESTED</u> |
|--------------------|---|
| G-1                | STS   |
| G-2                | STS   |
| G-3                | PAT   |
| G-4                | PAT   |
| G-5                | PAT   |
| G-6                | SAT   |
| G-7                | SAT   |
| G-8                | STS   |
| G-9                | STS   |
| G-10               | SAT   |
| G-11               | SAT   |
| G-12               | HT  |
| G-13               | HT  |
| G-14               | SAT   |
| G-15               | SAT   |
| G-16               | SAT   |

8. Section H

The starting point is the house on the northeast corner of North Street and Muskoka Road.

It is bounded on the north by North Street, east by Muskoka Road, south by George Street and west by District Road 11.

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION</u> |
|--------------------|-----------------------------|
|                    | <u>OR REPAIR SUGGESTED</u>  |
| H-1                | RLB                         |
| H-2                | RLB                         |
| H-3                | SAT                         |
| H-4                | SAT                         |
| H-5                | RLB                         |
| H-6                | SAT                         |
| H-7                | RLB                         |
| H-8                | SAT                         |
| H-9                | SAT                         |
| H-10               | SAT                         |
| H-11               | SAT                         |
| H-12               | PAT                         |
| H-13               | PAT                         |
| H-14               | PAT                         |
| H-15               | PAT                         |
| H-16               | STS                         |
| H-17               | SAT                         |
| H-18               | SAT                         |
| H-19               | STS                         |
| H-20               | PAT                         |

9. Section J

The starting point is the house on the southeast corner of District Road 11 and North Street.

It is bounded on the south by North Street and west by Joseph Street.

|      |     |
|------|-----|
| J-1  | SAT |
| J-2  | HT  |
| J-3  | SAT |
| J-4  | SAT |
| J-5  | STS |
| J-6  | SAT |
| J-7  | PAT |
| J-8  | STS |
| J-9  | SAT |
| J-10 | STS |
| J-11 | HT  |
| J-12 | SAT |
| J-13 | STS |
| J-14 | SAT |
| J-15 | SAT |
| J-16 | HT  |



Section J - Continued

| <u>SECTION LOT</u> | <u>TYPE OF INSTALLATION</u> |
|--------------------|-----------------------------|
|                    | <u>OR REPAIR SUGGESTED</u>  |
| J-17               | PAT                         |
| J-18               | SAT                         |
| J-19               | SAT                         |
| J-20               | STS                         |
| J-21               | STS                         |
| J-22               | SAT                         |
| J-23               | STS                         |
| J-24               | SAT                         |
| J-25               | STS                         |
| J-26               | RLB                         |
| J-27               | RLB                         |
| J-28               | PAT                         |
| J-29               | SAT                         |
| J-30               | SAT                         |
| J-31               | STS                         |

10. Section K

It is bounded on the North by Maple Street, east by Stewart Street,  
south by Stanley Street and west by Railway Street.

|      |     |
|------|-----|
| K-1  | SAT |
| K-2  | PAT |
| K-3  | STS |
| K-4  | SAT |
| K-5  | SAT |
| K-6  | STS |
| K-7  | SAT |
| K-8  | HT  |
| K-9  | STS |
| K-10 | STS |
| K-11 | SAT |
| K-12 | SAT |
| K-13 | SAT |
| K-14 | SAT |
| K-15 | STS |
| K-16 | SAT |
| K-17 | STS |
| K-18 | STS |
| K-19 | STS |
| K-20 | SAT |
| K-21 | SAT |
| K-22 | SAT |
| K-23 | SAT |
| K-24 | STS |

APPENDIX I - Sample Results

APPENDIX II - Maps

## APPENDIX I

## TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK A

| SAMPLING<br>POINT | DESCRIPTION  | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|--|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |  |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| A-1               | Creek "A" upstream<br>south side of Joseph<br>& Centre Streets | 25/08/65 | 1.2                 | 37              | -                 | -                                     | -                   | 300                         | -                   | -                       |
|                   |  | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 150                         | 23                  | -                       |
|                   |  | 9/05/72  | 2.0                 | 10              | 0.2               | 0.80                                  | 0.19                | 8,000                       | 250                 | < 10                    |
|                   |  | 7/07/75  | 6.0                 | < 15            | 0.1               | 1.8                                   | 0.16                | 80                          | 44                  | 20                      |
|                   |  | 21/07/75 | 6.0                 | 5               | < 0.1             | 1.7                                   | 0.12                | 48                          | 48                  | 100                     |
|                   |  | 25/08/75 | 2.0                 | < 15            | < 0.1             | 1.0                                   | 0.04                | 20,000                      | 8,000               | 1,700                   |
|                   |  | 22/09/75 | 0.8                 | < 15            | 0.1               | 1.6                                   | 0.08                | 35,000                      | 400                 | 400                     |
|                   |  | 14/10/75 | 1.8                 | < 15            | < 0.1             | 1.2                                   | 0.08                | 105,000                     | 100                 | 14                      |
| A-2               | Creek "A" south side<br>of High Street                         | 25/08/65 | 4.6                 | 16              | -                 | -                                     | -                   | 200,000                     | -                   | -                       |
|                   |  | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 1,500                       | 230                 | -                       |
|                   |  | 9/05/72  | 1.2                 | 10              | 0.1               | .50                                   | .035                | 25,000                      | 1,350               | 540                     |
|                   |  | 7/07/75  | 4.0                 | 20              | 0.1               | 2.7                                   | 0.12                | 700                         | 110                 | 0                       |
|                   |  | 21/07/75 | 1.4                 | 10              | < 0.1             | 1.4                                   | 0.04                | 13,000                      | 600                 | 1,600                   |
|                   |  | 25/08/75 | 2.0                 | < 15            | < 0.1             | 0.8                                   | 0.04                | 38,000                      | 9,000               | 3,000                   |
|                   |  | 22/09/75 | 0.8                 | < 15            | 0.1               | 1.4                                   | 0.08                | 70,000                      | 1,700               | 400                     |
|                   |  | 14/10/75 | 0.6                 | < 15            | < 0.1             | 0.3                                   | < .02               | 4,400                       | 150                 | 300                     |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK A

| SAMPLING<br>POINT | DESCRIPTION   | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|---|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |   |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| M-3               | Drainage from<br>Muskoka Road sampled<br>on east side of Fern<br>Avenue | 9/05/72  | 1.2                 | 5               | 0.1               | .26                                   | .012                | 20                          | <10                 | 20                      |
|                   |   | 7/07/75  | 4.0                 | 10              | 0.1               | 1.6                                   | 0.08                | 5,300                       | 1,000               | 136                     |
|                   |   | 21/07/75 | 22                  | 15              | 5.7               | 3.5                                   | 1.7                 | 6,000                       | 800                 | 3,600                   |
|                   |   | 25/08/75 | 2.2                 | 15              | <0.1              | 0.8                                   | 0.08                | 70,000                      | 22,000              | 23,000                  |
|                   |   | 22/09/75 | 1.2                 | <15             | <0.1              | 1.4                                   | 0.08                | 70,000                      | 600                 | 500                     |
|                   |   | 14/10/75 | 1.2                 | <15             | <0.1              | 1.0                                   | 0.08                | 58,000                      | 300                 | 200                     |
| M-2               | Seepage from east<br>side of Fern Street                                | 9/05/72  | 110                 | 50              | 7.0               | 7.5                                   | 1.1                 | 450,000                     | 2,300               | <100                    |
|                   |   | 25/08/75 | 2.5                 | 30              | <0.1              | 1.0                                   | 0.08                | 61,000                      | 12,000              | 30,000                  |
|                   |   | 22/09/75 | 1.2                 | <15             | 0.1               | 1.6                                   | 0.08                | 28,000                      | 1,200               | 400                     |
|                   |   | 14/10/75 | 1.8                 | <15             | <0.1              | 1.0                                   | 0.08                | 72,000                      | 200                 | 400                     |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK A

| SAMPLING<br>POINT | DESCRIPTION   | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|---|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |   |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| M-1               | Seepage from east side of Fern Street sampled at culvert      | 9/05/72  | 95                  | 160             | 10                | 19.0                                  | 11.0                | 100,000,000                 | 600                 | 28,000                  |
| A-3               | Creek "A" west side of Fern Street                            | 25/08/65 | 2.2                 | 12              | -                 | -                                     | -                   | 50,000                      | -                   | -                       |
|                   |   | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 4,300                       | 230                 | -                       |
|                   |   | 7/07/75  | 20                  | 125             | 0.2               | 11.0                                  | 1.6                 | 16,000                      | 200                 | 0                       |
|                   |   | 21/07/75 | 6.0                 | 10              | 0.1               | 1.9                                   | 0.16                | 5,000                       | 200                 | 280                     |
|                   |   | 25/08/75 | 3.0                 | 25              | 0.1               | 1.0                                   | 0.12                | 80,000                      | 6,000               | 22,000                  |
|                   |   | 22/09/75 | 1.6                 | < 15            | 0.1               | 1.4                                   | 0.08                | 400,000                     | 900                 | 4,700                   |
|                   |   | 14/10/75 | 2.2                 | < 15            | 0.1               | 1.6                                   | 0.15                | 48,000                      | 3,900               | 700                     |
| A-4               | Creek "A" down-stream behind Township Works Department Garage | 25/08/65 | 2.4                 | 6               | -                 | -                                     | -                   | 10,000                      | -                   | -                       |
|                   |   | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 24,000                      | 230                 | -                       |
|                   |   | 9/05/72  | 1.8                 | 5               | 0.3               | 1.3                                   | 0.25                | 110,000                     | 10,000              | 440                     |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK A

| SAMPLING<br>POINT | DESCRIPTION   | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|---|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |   |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| N-1               | Creek "A" north<br>side of Joseph &<br>Centre Streets                     | 25/08/75 | 1.6                 | < 15            | < 0.1             | 0.80                                  | 0.04                | 40,000                      | 4,000               | 2,500                   |
| N-2               | Sump discharge<br>to Creek "A"<br>south side of<br>North Street           | 22/09/75 | 0.6                 | < 15            | < 0.1             | 1.2                                   | 0.08                | 10,000                      | 800                 | 496                     |
| N-3               | Waste water<br>discharge to<br>Creek "A" south<br>side of North<br>Street | 7/07/75  | 190                 | 275             | 7.0               | 23                                    | 18.0                | 25,000                      | 0                   | 0                       |
|                   |   | 21/07/75 | 150                 | 1,600           | 19.5              | 33                                    | 14.0                | 1,100,000                   | 16                  | 19,000                  |
|                   |   | 25/08/75 | -                   | -               | -                 | -                                     | -                   | 200,000                     | 900                 | 500                     |
|                   |   | 22/09/75 | -                   | -               | -                 | -                                     | -                   | 44,000                      | 1,800               | 412                     |
|                   |   | 14/10/75 | 20                  | 140             | < 0.1             | 2.6                                   | 1.4                 | 186,000                     | 176                 | 30                      |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK B

| SAMPLING<br>POINT | DESCRIPTION   | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|---|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |   |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| B-5               | Creek "B" upstream<br>behind Township<br>Office.  | 9/05/72  | 9.0                 | 60              | 0.5               | 4.5                                   | 0.50                | 140,000                     | 150                 | 70                      |
| B-1               | Catchbasin west<br>of High & Front<br>Streets.  | 25/08/65 | 11                  | 38              | -                 | -                                     | -                   | 400,000                     | -                   | -                       |
|                   |   | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 110,000                     | 24,000              | -                       |
|                   |   | 9/05/72  | 15                  | 100             | 0.6               | 4.5                                   | 0.75                | 10,200,000                  | 3,500               | 1,170                   |
| B-2               | Catchbasin south<br>of Front Street   | 7/07/75  | 70                  | 340             | 5.0               | 22                                    | 9.4                 | 270,000                     | -                   | 0                       |
|                   |   | 21/07/75 | 45                  | 370             | 6.2               | 10                                    | 4.4                 | 2,900,000                   | 1,000,000           | 3,400                   |
|                   |   | 25/08/75 | 14                  | 70              | 0.3               | 4.2                                   | 8.0                 | 280,000,000                 | 1,100,000           | 400                     |
| B-7               | Outfall from<br>basement sump   | 9/05/72  | 3.0                 | 30              | -                 | 2.5                                   | 0.10                | 30                          | <10                 | <10                     |
| B-9               | Catchbasin north<br>side of Front St.<br>4" PVC entering<br>catchbasin from<br>basement sump. | 14/10/75 | 40                  | 175             | 0.3               | 3.3                                   | 1.2                 | 9,700                       | 3,100               | -                       |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK B

| SAMPLING<br>POINT | DESCRIPTION                                | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|--|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |  |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| B-6               | Creek "B" to<br>Stewart Lake               | 9/05/72  | 3.0                 | 20              | 0.1               | 1.3                                   | 0.10                | 10                          | 10                  | 10                      |
|                   |  | 14/10/75 | 7.0                 | 15              | 0.2               | 3.3                                   | 0.38                | 18,000,000                  | 1,200,000           | 224                     |
| B-3               | Creek "B"<br>downstream                    | 25/08/65 | 65                  | 74              | -                 | -                                     | -                   | 800,000                     | -                   | -                       |
|                   |  | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 110,000                     | 110,000             | -                       |
| B-4               | Creek "B"<br>downstream from<br>swamp area | 25/08/65 | 1.1                 | 2               | -                 | -                                     | -                   | 1,000                       | -                   | -                       |
|                   |  | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 110,000                     | 110,000             | -                       |
|                   |  | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 130                         | 10                  | 10                      |



TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - Miscellaneous

| SAMPLING<br>POINT | DESCRIPTION  | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|--|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |  |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| R-1               | Drainage ditch at<br>Stewart Street                    | 25/08/65 | 63                  | 668             | -                 | -                                     | -                   | 2,600,000                   | -                   | -                       |
|                   |  | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 9,300                       | 430                 | -                       |
|                   |  | 9/05/72  | 0.8                 | 5               | -                 | 1.0                                   | 0.05                | 11,400                      | 10                  | 10                      |
| B-8               | Drainage ditch<br>west of pumphouse<br>at Beech Avenue | 9/05/72  | 1.0                 | 5               | -                 | 0.5                                   | 0.2                 | 40                          | 10                  | 10                      |
|                   |  | 14/10/75 | 1.6                 | 20              | 0.1               | 0.6                                   | 0.04                | 2,000                       | 28                  | 400                     |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - LAKE STEWART

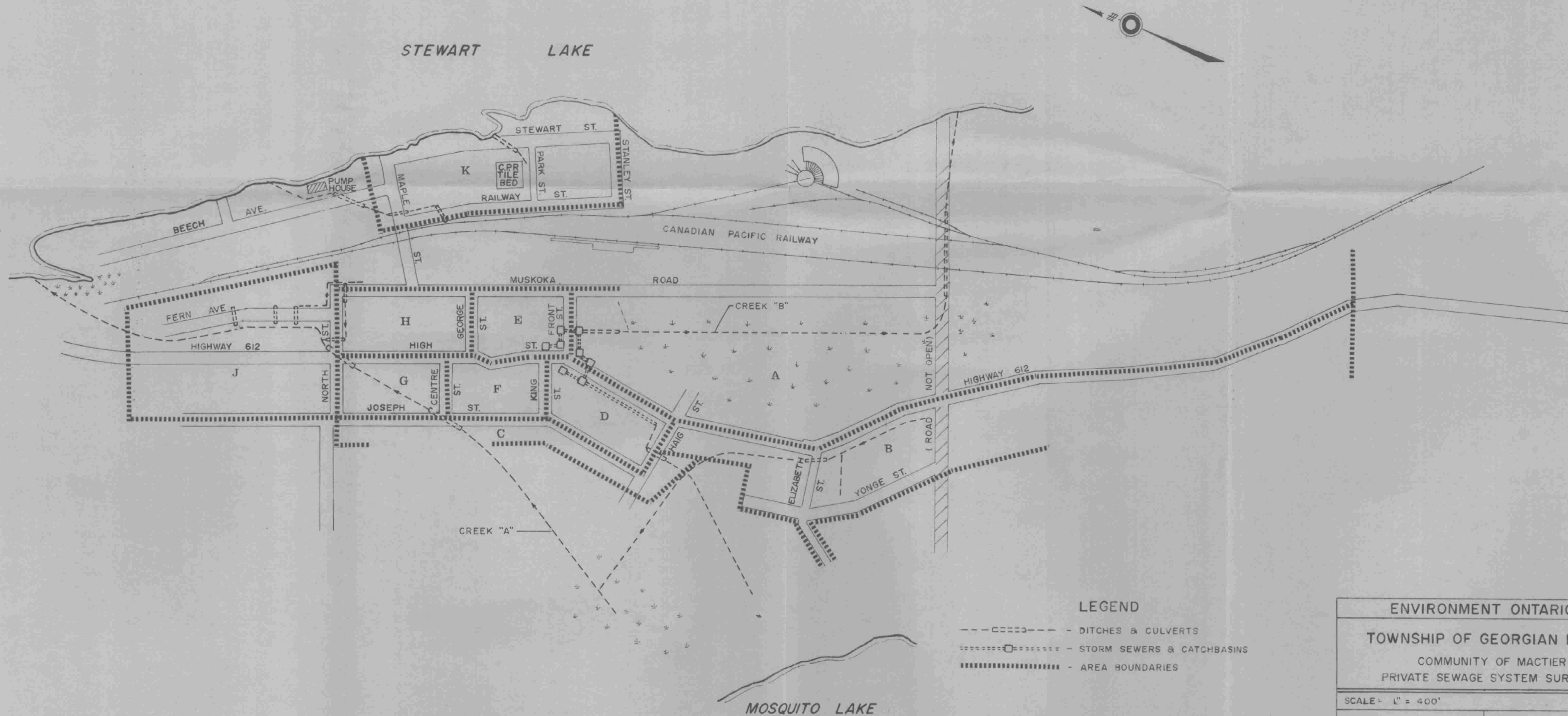
| SAMPLING<br>POINT | DESCRIPTION  | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|--------------|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |              |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| LS-1              | Stewart Lake | 25/08/65 | 0.7                 | 3               | -                 | -                                     | -                   | 200                         | -                   | -                       |
|                   |              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 23                          | 0                   | -                       |
|                   |              | 14/10/75 | 3.5                 | 20              | 0.1               | 0.3                                   | <0.2                | 305,000                     | 246                 | 114                     |
| LS-2              | Stewart Lake | 25/08/65 | 0.9                 | 5               | -                 | -                                     | -                   | 200                         | -                   | -                       |
|                   |              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 23                          | 0                   | -                       |
|                   |              | 7/07/75  | 0.6                 | 1               | < 0.1             | .34                                   | .007                | 10                          | 0                   | 0                       |
|                   |              | 21/07/75 | 1.0                 | 2               | -                 | .36                                   | .006                | 42                          | 18                  | 64                      |
| LS-3              | Stewart Lake | 25/08/65 | 0.6                 | 4               | -                 | -                                     | -                   | 200                         | -                   | -                       |
|                   |              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 9                           | 0                   | -                       |
|                   |              | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 76                          | 1                   | 1                       |
|                   |              | 7/07/75  | 0.6                 | 2               | < 0.1             | .39                                   | .014                | 100                         | 12                  | 0                       |
|                   |              | 21/07/75 | 0.8                 | 2               | -                 | .34                                   | .005                | 200                         | 26                  | 18                      |

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - LAKE STEWART

| SAMPLING<br>POINT | DESCRIPTION                  | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|------------------------------|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |                              |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| LSC-3A            | Stewart Lake at<br>pumphouse | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 268                         | 4                   | 1                       |
|                   |                              | 7/07/75  | 0.6                 | 1               | < 0.1             | .40                                   | .016                | 14                          | 0                   | 0                       |
|                   |                              | 21/07/75 | 1.0                 | 50              | -                 | .32                                   | .005                | 2,300                       | 100                 | 16                      |
|                   |                              | 25/08/75 | 0.8                 | < 15            | < 0.1             | .40                                   | < .02               | 3,500                       | 64                  | 1,400                   |
|                   |                              | 22/09/75 | 0.4                 | < 15            | < 0.1             | 0.6                                   | .04                 | 300                         | 12                  | 12                      |
|                   |                              | 14/10/75 | 1.0                 | < 15            | < 0.1             | 0.6                                   | .04                 | 70                          | 2                   | 0                       |
| LS-4              | Stewart Lake at<br>Beach     | 25/08/65 | 0.8                 | 9               | -                 | -                                     | -                   | 100                         | -                   | -                       |
|                   |                              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 9                           | 0                   | -                       |
|                   |                              | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 124                         | 1                   | 1                       |
|                   |                              | 7/07/75  | 0.6                 | 2               | < 0.1             | .44                                   | .012                | 2,300                       | 24                  | 0                       |
|                   |                              | 21/07/75 | 1.0                 | 1               | -                 | .32                                   | .004                | 68                          | 20                  | 2                       |
| LS-5              | Stewart Lake                 | 25/08/65 | 0.9                 | 5               | -                 | -                                     | -                   | 100                         | -                   | -                       |
|                   |                              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 4                           | 0                   | -                       |
|                   |                              | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 144                         | 1                   | 4                       |
|                   |                              | 7/07/75  | 0.6                 | 2               | 0.1               | .32                                   | .011                | 12                          | 0                   | 0                       |
|                   |                              | 21/07/75 | 0.6                 | 4               | -                 | 1                                     | .004                | 20                          | 6                   | 6                       |

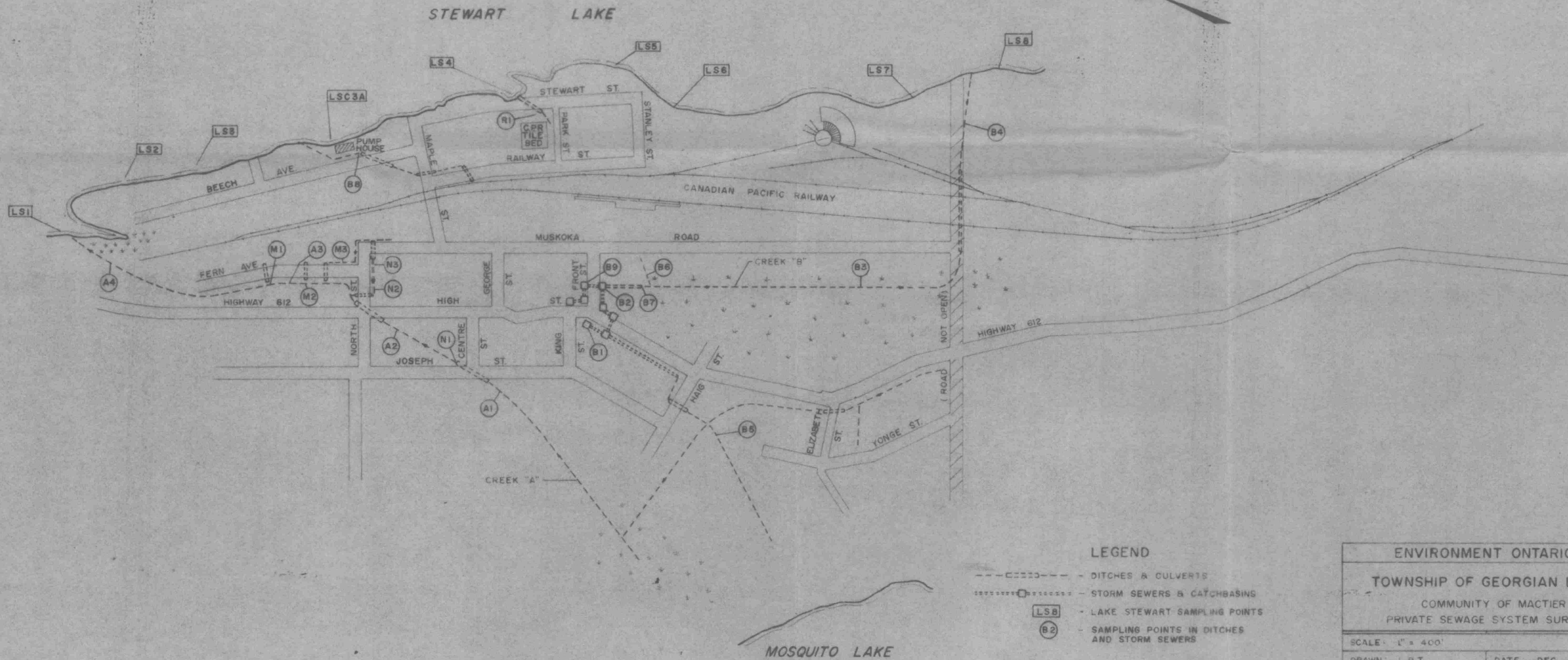
TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - LAKE STEWART

| SAMPLING<br>POINT | DESCRIPTION  | DATE     | 5-DAY<br>BOD<br>ppm | SUSP.<br>SOLIDS | MBAS<br>as<br>LAS | NITROGEN<br>as N<br>Total<br>Kjeldahl | TOTAL<br>PHOSPHORUS | BACTERIOLOGICAL EXAMINATION |                     |                         |
|-------------------|--------------|----------|---------------------|-----------------|-------------------|---------------------------------------|---------------------|-----------------------------|---------------------|-------------------------|
|                   |              |          |                     |                 |                   |                                       |                     | Total<br>Coliforms          | Faecal<br>Coliforms | Faecal<br>Streptococcus |
| LS-6              | Stewart Lake | 25/08/65 | 0.4                 | 3               | -                 | -                                     | -                   | 100                         | -                   | -                       |
|                   |              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 15                          | 0                   | -                       |
|                   |              | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 72                          | 1                   | 1                       |
|                   |              | 7/07/75  | 0.8                 | 4               | < 0.1             | .36                                   | .011                | 20                          | 2                   | 0                       |
|                   |              | 21/07/75 | 1.0                 | 4               | -                 | .31                                   | .006                | 44                          | 12                  | 4                       |
|                   |              |          |                     |                 |                   |                                       |                     |                             |                     |                         |
| LS-7              | Stewart Lake | 25/08/65 | 0.5                 | 4               | -                 | -                                     | -                   | 200                         | -                   | -                       |
|                   |              | 14/10/65 | 0.4                 | 5               | -                 | -                                     | -                   | 43                          | 0                   | -                       |
|                   |              | 9/05/72  | -                   | -               | -                 | -                                     | -                   | 60                          | 1                   | 1                       |
|                   |              | 7/07/75  | 0.6                 | 1               | < 0.1             | .34                                   | .011                | 32                          | 0                   | 0                       |
|                   |              | 21/07/75 | 0.8                 | 1               | -                 | .30                                   | .003                | 26                          | 24                  | 2                       |
|                   |              |          |                     |                 |                   |                                       |                     |                             |                     |                         |
| LS-8              | Stewart Lake | 25/08/65 | -                   | -               | -                 | -                                     | -                   | 200                         | -                   | -                       |
|                   |              | 14/10/65 | -                   | -               | -                 | -                                     | -                   | 43                          | 0                   | -                       |
|                   |              | 7/07/75  | 0.6                 | 1               | < 0.1             | .38                                   | .011                | 16                          | 4                   | 0                       |
|                   |              | 21/07/75 | 1.0                 | 2               | -                 | .34                                   | .008                | 3,300                       | 16                  | 8                       |



|                              |                            |
|------------------------------|----------------------------|
| ENVIRONMENT ONTARIO          |                            |
| TOWNSHIP OF GEORGIAN BAY     |                            |
| COMMUNITY OF MACTIER         |                            |
| PRIVATE SEWAGE SYSTEM SURVEY |                            |
| SCALE: 1" = 400'             |                            |
| DRAWN: L.R.T.                | DATE: DEC. 1975            |
| CHECKED: G.A.Y.              | DRAWING N <sup>o</sup> . 1 |





| ENVIRONMENT ONTARIO          |                 |
|------------------------------|-----------------|
| TOWNSHIP OF GEORGIAN BAY     |                 |
| COMMUNITY OF MACTIER         |                 |
| PRIVATE SEWAGE SYSTEM SURVEY |                 |
| SCALE: 1" = 400'             |                 |
| DRAWN: L.R.T.                | DATE: DEC. 1975 |
| CHECKED: G.A.Y.              | DRAWING N°. 2   |

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